



Indian Wells Valley Groundwater Basin Salt and Nutrient Management Plan

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Complex Challenges | Innovative Solutions

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Presentation Overview

- SNMP Background
- Overview of SNMP Planning Process
- Review of Findings
 - Existing WQ Analysis and Assimilative Capacity
 - Future WQ Analysis
 - RW and Stormwater Goals
 - Existing Implementation Measures
 - SNMP Groundwater Monitoring Program
- Next Steps for the SNMP

Background

- 2009 Recycled Water Policy adopted by the State Water Resources Control Board
 - Increase use of recycled water
 - Increase stormwater recharge
 - Streamline project permitting
- Recycled Water Policy: develop SNMP for **all** groundwater basins or subbasins in California



SNMP- a Regulatory Document

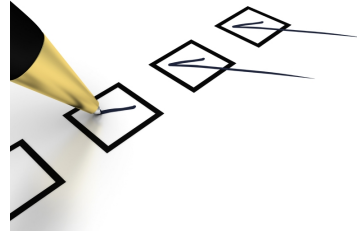
Plan Purpose:

- Promote reliance on local sustainable water sources such as recycled water and stormwater
- Manage salts and nutrients from all sources on a sustainable basis to ensure attainment of water quality objectives and protection of beneficial uses



SNMP Required Elements

1. Groundwater monitoring plan
2. Goals and objectives for water recycling and stormwater recharge
3. Salt and nutrient source characterization, assimilative capacity, loading estimates and fate & transport
4. Measures to manage loading
5. Anti-degradation analysis



Background and Status of Salt & Nutrient Management Plan in Indian Wells Valley

- Salt and Nutrient Management Plan initiated by Navy representative to the IWW Cooperative Groundwater Management Group TAC in 2015
- Review by RWQCB found areas to supplement in the plan including:
 - Salt & Nutrient Loading Analysis
 - Assimilative Capacity Estimate
 - Recycled water project areas including recharge
 - Antidegradation analysis
- Technical analysis for loading in 2016
- Mixing model and plan finalization in 2017



Existing Water Quality Analysis

Evaluation

- Simplified analysis using existing dataset compiled by Navy in 2016
- 41 wells reviewed and contoured
- GIS Spatial Analyst Tools used for averaging

Results

- Overall good water quality with some hotspots for TDS
- Relatively stable trends for TDS and nitrate



Assimilative Capacity

TDS

Basin Plan Objective = 500 mg/L

Available Capacity = 130 mg/L

Existing Average GW Quality = 310 mg/L

Nitrate-N

Basin Plan Objective = 10 mg/L

Available Capacity = 6.93 mg/L

Existing Average GW Quality = 3.07 mg/L



SNMP Loading Analysis

- Analysis of salt and nutrient loading occurring due to surface activities
 - Irrigation water (potable water, recycled water, and groundwater)
 - Agricultural Inputs (fertilizer, applied water)
 - Residential Inputs (septic systems, fertilizer, applied water)



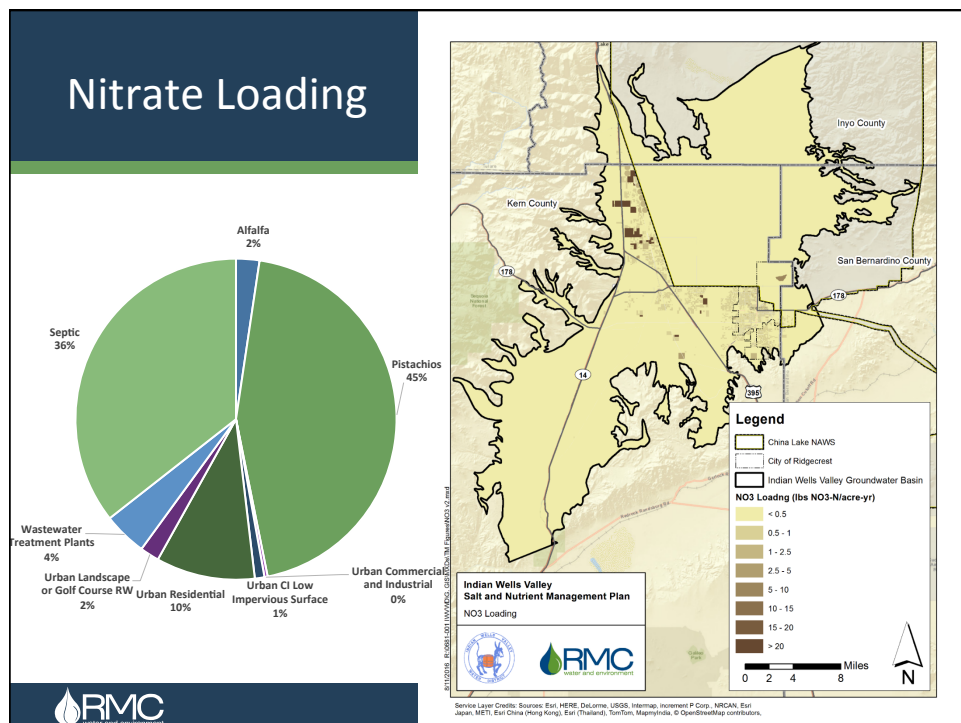
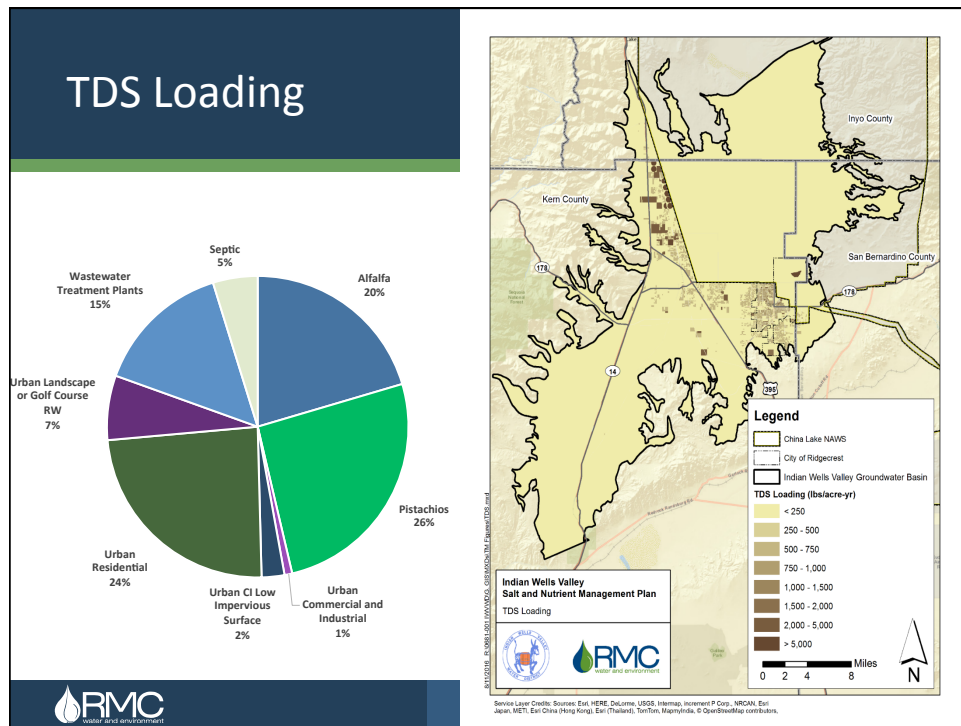
9

Loading Results – vetted and updated through stakeholder process

Land Use Group	Total Area (acres)	Percent of Total Area	Total TDS Load (lbs)	Percent of Total TDS Loading	Total N Load (lbs)	Percent of Nitrogen Loading
Alfalfa	1,023	7%	6,440,000	20%	2,200	2%
Pistachios	2,001	13%	8,160,000	26%	41,500	44%
Urban Commercial and Industrial	989	7%	260,000	1%	300	0%
Urban CI Low Impervious Surface	470	3%	770,000	2%	900	1%
Urban Residential	9,987	67%	7,560,000	24%	9,300	10%
Urban Landscape or Golf Course	379	3%	2,180,000	7%	1,800	2%
Wastewater Treatment Plants	2 Treatment Plants	N/A	4,640,000	15%	4,100	4%
Septic	2,818 Septic Systems	N/A	1,510,000	5%	33,200	36%

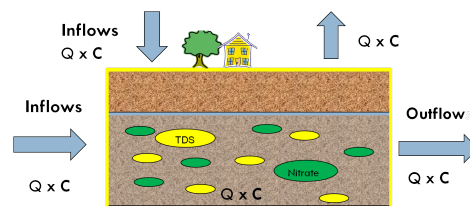


10



Mixing Model

- Groundwater in storage and existing avg. GW quality mixed with S/N loads → Annual WQ Concentrations



13

Future Water Quality Trends

Future Planning Horizon 2015 - 2040



- Simulate future annual water quality and AC
- Estimate use of AC by recycled water projects (reclaimed water for IWW Basin)
 - RW project uses less than 10% of the available AC (assuming future use of 4,600 AFY in 2040)



Future Average TDS and Nitrate-N Findings

- TDS:
 - Recycled water projects use less than 10% of available AC
 - BPOs will not be exceeded (TDS projected to increase from 310 mg/L to 420 mg/L; or up to 452 mg/L assuming full RW expansion to 4,600 AFY)
- Nitrate-N:
 - Recycled water use less than 10% of AC
 - BPOs will not be exceeded (Nitrate-N projected to increase from 3.07 mg/L to 3.20 mg/L or up to 3.33 mg/L assuming full RW expansion to 4,600 AFY)



Recycled Water and Stormwater Reuse Goals (Required Element of SNMP)

Goals are:

- **Recycled Water** - Expand reclaimed wastewater use in the basin from 3,115 AFY in 2015 to 4,600 in 2040
- **Stormwater** - Explore the potential for utilization of stormwater for recharge purposes collaboratively through the IRWM program partnership



Current Implementation Measures are Effective and Should Continue

- Agricultural BMPs
- Reclaimed Wastewater BMPs
- Groundwater Management
 - Evolving with SGMA
 - GW Resources Feasibility Study
 - Brackish Groundwater Resources Project
- Septic System BMPs
- Municipal Wastewater Management



SNMP Groundwater Monitoring Plan

- Subset of wells ID'd by Navy to be sampled annually for SNMP (5 areas, 22 wells total)
- Analyze TDS, nitrate, electrical conductivity, general minerals & physical constituents
- Reported triennially to Regional Water Board
- Incorporate into larger GSP Monitoring Program as it's developed by the IWVGA



Next Steps for the Indian Wells Valley SNMP

Comments:

- Initial comments due on Draft SNMP by Wednesday December 6, 2017
- Submit comments to don.zdeba@iwwvd.com, (760) 384-5555

Finalization and Submittal to Water Board

- Regional Water Board requested draft SNMP be submitted to them by December 13
- SNMP will be reviewed by the Regional Water Board for acceptance at April 11-12 Barstow meeting

